

**ABSTRACT**

Apparatus and methods are provided for the imaging of structures in deep tissue within biological specimens, using spectral imaging to provide highly sensitive detection. By  
5 acquiring data that provides a plurality of images of the sample with different spectral weightings, and subsequent spectral analysis, light emission from a target compound is separated from autofluorescence in the sample. With the autofluorescence reduced or eliminated, an improved measurement of the target compound is obtained.